

SEQUENCE LISTING

<110> CHONNAM NATIONAL UNIVERSITY et al.
<120> MUCOSAL VACCINE ADJUVANTS CONTAINING BACTERIAL FLAGELLINS AS AN ACTIVE COMPONENT
<130> Q95704
<140> US/10/585,880
<141> 2006-07-11
<150> KR 10-2004-0001974
<151> 2004-01-12
<160> 18
<170> KopatentIn 1.71
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<211> 1131
<212> DNA
<213> *Vibrio vulnificus*
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gcgaaagatg atgctgcagg tctacaaatt tctaaccgtt tgaactcgca aagccgtgg 180
ctcgacatgg cggtaaaaaa tgccaaacgt ggtatctcta ttgcacagac tgctgaagg 240
gcaatgacag agaccaccaa catcctacaa cgtatgcgtg accttgcctt gcaatcgct 300
aacggttcga actctcgttc tgaacgcgtg gcgattcaag aagaagtgtc agcggtgaac 360
caagaactta accgtatcgc agagacaacc tctttgggt gtaacaaact ccttaacgg 420
acgtacggtt ctcaatcttt ccaaatcggt gctgactctg gtgaagctgt gatgctttct 480
atgggtaacc ttcgttcaga tacagacgcg atggggcgct tgagctacaa atctgaagaa 540
ggcgtaggcg cagattggcg tgtaagcgac aacactgact tcacgatgtc ttatgtgaat 600
aagcaagggtg aagaaaaaga gatcacagtc aacgccaaag cgggtgacga tcttgaagaa 660
ctggcgactt acatcaacgg tcaaaacgt gatgtgaaag cgtcggtcgg tgaaggcggc 720
aaactgcagc tattcgcttc taaccaacgt gttagaagggtg aagtggatt cgggtgggt 780
ctagcgtctg agttgaacat tggtgatggc accaaaaacca atgtgagcaa cattgatgtc 840
acgacggttg ctggctctca agaaggcagta gcgatcattg atggcgcatt gaaatcggt 900
gacagtgagc gtgcctctct aggtgcattc caaaaccgtt tcaaccatgc aatcagcaac 960
ctaagcaaca tcaatgagaa cgtaaacgct tcgagcagcc gtatcaagga taccgactac 1020
gcgaaagaaa cgactcagat gactaagacg caaattctgc agcaggcggag tacttctatc 1080

ctggcgcagg cgaaggcagtc accatctgca gctcttagct tggtgggcta a

1131

<210> 2
<211> 376
<212> PRT
<213> Vibrio vulnificus

<400> 2
Met Ala Ile Asn Val Asn Thr Asn Val Ser Ala Met Thr Ala Gln Arg
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Ser Ser Gly Tyr Lys Ile Asn Ser Ala Lys Asp Asp Ala Ala Gly Leu
35 40 45
Gln Ile Ser Asn Arg Leu Asn Ser Gln Ser Arg Gly Leu Asp Met Ala
50 55 60
Val Lys Asn Ala Asn Asp Gly Ile Ser Ile Ala Gln Thr Ala Glu Gly
65 70 75 80
Ala Met Thr Glu Thr Asn Ile Leu Gln Arg Met Arg Asp Leu Ala
85 90 95
Leu Gln Ser Ser Asn Gly Ser Asn Ser Arg Ser Glu Arg Val Ala Ile
100 105 110
Gln Glu Glu Val Ser Ala Leu Asn Gln Glu Leu Asn Arg Ile Ala Glu
115 120 125
Thr Thr Ser Phe Gly Gly Asn Lys Leu Leu Asn Gly Thr Tyr Gly Ser
130 135 140
Gln Ser Phe Gln Ile Gly Ala Asp Ser Gly Glu Ala Val Met Leu Ser
145 150 155 160
Met Gly Asn Leu Arg Ser Asp Thr Asp Ala Met Gly Gly Leu Ser Tyr
165 170 175
Lys Ser Glu Glu Gly Val Gly Ala Asp Trp Arg Val Ser Asp Asn Thr
180 185 190
Asp Phe Thr Met Ser Tyr Val Asn Lys Gln Gly Glu Glu Lys Glu Ile
195 200 205
Thr Val Asn Ala Lys Ala Gly Asp Asp Leu Glu Glu Leu Ala Thr Tyr
210 215 220
Ile Asn Gly Gln Asn Asp Asp Val Lys Ala Ser Val Gly Glu Gly
225 230 235 240
Lys Leu Gln Leu Phe Ala Ser Asn Gln Arg Val Glu Gly Glu Val Glu
245 250 255
Phe Gly Gly Leu Ala Ser Glu Leu Asn Ile Gly Asp Gly Thr Lys
260 265 270

Thr Asn Val Ser Asn Ile Asp Val Thr Thr Val Ala Gly Ser Gln Glu
275 280 285

Ala Val Ala Ile Ile Asp Gly Ala Leu Lys Ser Val Asp Ser Glu Arg
290 295 300

Ala Ser Leu Gly Ala Phe Gln Asn Arg Phe Asn His Ala Ile Ser Asn
305 310 315 320

Leu Ser Asn Ile Asn Glu Asn Val Asn Ala Ser Ser Ser Arg Ile Lys
325 330 335

Asp Thr Asp Tyr Ala Lys Glu Thr Thr Gln Met Thr Lys Thr Gln Ile
340 345 350

Leu Gln Gln Ala Ser Thr Ser Ile Leu Ala Gln Ala Lys Gln Ser Pro
355 360 365

Ser Ala Ala Leu Ser Leu Leu Gly
370 375

<210> 3
<211> 1133
<212> DNA
<213> Vibrio vulnificus

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gcaaaagatg acgcagccgg tctgcaaatac tctaaccgct tgaacgtaca aagtgcgg 180
ctagacgttg cggtagttaa cgccaaacgac ggtatctcaa tcgcacaaac cgcagaagg 240
gcgatgaacg agaccaccaa catcctacaa cgtatgcgtg acctatctct acaatccg 300
aacggctcaa actcaaaatc agagcgcgtg gcgattcaag aagaagtgac agcattgaat 360
gacgagctaa accgtattgc agaaaaccacg tctttggtg gtaacaagct gctaaacgg 420
acttacggca cgaaagcaat gcaaattggt gcggataacg gtgaagcggt catgctttca 480
ctgaaagaca tgcgctctga caacgtgatg atggcggcg tgagctacca agctgaagaa 540
ggcaaagaca agaactggaa tgtggccgca ggcgacaacg acttgacgat tgcactgaca 600
gacagcttg gtaacgagca agagatcgaa atcaacgcga aagcgggtga tgacatcgaa 660
gagctagcga cgtacatcaa cggtaacta gaccttgtaa aagcgtcagt gggtaaggc 720
ggcaagctac agatcttgc tggttacaac aaagttcaag gtgaaattgc tttctcaggt 780
agcctagctg gtgaacttgg cctaggcgaa ggcaaaaacg tcacggtaga cacgattgac 840
gtgacaacccg tacaagggtgc gcaagagtcg gtagcgattg tggatgcggc actgaaatac 900
gtagacagcc accgtgcaga gctgggtgca ttccagaacc gtttcaacca tgcaatcagc 960

aacttggaca acatcaacga aaacgtgaac gcgtcgaaga gccgaatcaa agataaccgac 1020
ttcgcgaaag aaacgactca gttgaccaag acacaaattc tatcgcaagc atcaagttcc 1080
attcttgcgc aagcgaaaca agcgccaaac tcagcgctaa gtctactagg cta 1133

<210> 4
<211> 375
<212> PRT
<213> Vibrio vulnificus

<400> 4
Met Ala Val Asn Val Asn Thr Asn Val Ala Ala Met Thr Ala Gln Arg
1 5 10 15
Tyr Leu Asn Asn Ala Asn Ser Ala Gln Gln Thr Ser Met Glu Arg Leu
20 25 30
Ser Ser Gly Phe Lys Ile Asn Ser Ala Lys Asp Asp Ala Ala Gly Leu
35 40 45
Gln Ile Ser Asn Arg Leu Asn Val Gln Ser Arg Gly Leu Asp Val Ala
50 55 60
Val Arg Asn Ala Asn Asp Gly Ile Ser Ile Ala Gln Thr Ala Glu Gly
65 70 75 80
Ala Met Asn Glu Thr Thr Asn Ile Leu Gln Arg Met Arg Asp Leu Ser
85 90 95
Leu Gln Ser Ala Asn Gly Ser Asn Ser Lys Ser Glu Arg Val Ala Ile
100 105 110
Gln Glu Glu Val Thr Ala Leu Asn Asp Glu Leu Asn Arg Ile Ala Glu
115 120 125
Thr Thr Ser Phe Gly Gly Asn Lys Leu Leu Asn Gly Thr Tyr Gly Thr
130 135 140
Lys Ala Met Gln Ile Gly Ala Asp Asn Gly Glu Ala Val Met Leu Ser
145 150 155 160
Leu Lys Asp Met Arg Ser Asp Asn Val Met Met Gly Gly Val Ser Tyr
165 170 175
Gln Ala Glu Glu Gly Lys Asp Lys Asn Trp Asn Val Ala Ala Gly Asp
180 185 190
Asn Asp Leu Thr Ile Ala Leu Thr Asp Ser Phe Gly Asn Glu Gln Glu
195 200 205
Ile Glu Ile Asn Ala Lys Ala Gly Asp Asp Ile Glu Glu Leu Ala Thr
210 215 220
Tyr Ile Asn Gly Gln Thr Asp Leu Val Lys Ala Ser Val Gly Glu Gly
225 230 235 240
Gly Lys Leu Gln Ile Phe Ala Gly Asn Asn Lys Val Gln Gly Glu Ile

245	250	255
Ala Phe Ser Gly Ser Leu Ala Gly Glu Leu Gly Leu Gly Glu Gly Lys		
260	265	270
Asn Val Thr Val Asp Thr Ile Asp Val Thr Thr Val Gln Gly Ala Gln		
275	280	285
Glu Ser Val Ala Ile Val Asp Ala Ala Leu Lys Tyr Val Asp Ser His		
290	295	300
Arg Ala Glu Leu Gly Ala Phe Gln Asn Arg Phe Asn His Ala Ile Ser		
305	310	315
Asn Leu Asp Asn Ile Asn Glu Asn Val Asn Ala Ser Lys Ser Arg Ile		
325	330	335
Lys Asp Thr Asp Phe Ala Lys Glu Thr Thr Gln Leu Thr Lys Thr Gln		
340	345	350
Ile Leu Ser Gln Ala Ser Ser Ser Ile Leu Ala Gln Ala Lys Gln Ala		
355	360	
Pro Asn Ser Ala Leu Ser Leu		
370	375	

<210> 5
 <211> 1133
 <212> DNA
 <213> Vibrio vulnificus

<400> 5		
gtggcgatca ccgttaatac caatgtggca gcacttgtcg cacagcgtca tttgaccagt	60	
gcaaccgaca tgctgaatca atccttggag cgtttgtctt cagggaaagcg tattaatagt	120	
gcaaaagacg atgcggcagg gctgcaaatt tcgaatcgtc ttcagtcgca aatgcgtgg	180	
ttagatatcg cggtgcgaaa tgccaatgtat ggcatctcca ttatgcagac tgcggaaggg	240	
gcaatgaatg aaaccactaa tattctccaa agatgcgtg atcttcatt gcaatccgcc	300	
aatggttcca atagctatgc tgaaagaata gccttacaag aagaaatgac cgcgttaaat	360	
gacgagttga accgtatcgc agaaaccacc tcgttcggt ggcgtaaatt gctcaatgg	420	
tcctttggct cggctgcctt tcagataggg gcagcgtcag gtgaagcggt gcaagtgc当地	480	
ctgaagtcga tgcgcagtga tggattatgat atgggtggct tcagttacat tgcaaacgga	540	
cgtgcccgtt ctgattggca agtaaaagag ggggcgaatg cgcttagcat gtcattcacg	600	
aatcgaaaaatgtatcgaa aacgatccaa attaatgcga aagccggcga tgatatcgaa	660	
gagcttgcga cctacattaa tggtcagact gacaaagtca cggcatcggt gaatgaagaa	720	
ggtcagctac agttgtttat ggcggcga gaaacctcag gaacgttatac gttttcagga	780	
gacttagcca gtgaactcgg ttgcacta aaaggttacg atgcgggtgaa taatatcgac	840	

attacttctg tcgggtggcgc tcaacaaggca gtggctgtcc ttgataccgc gatgaaatac 900
gtcgatagtc atcgtgctga gctaggggca tatcaaaacc gcttcagcca tgcgattaat 960
aacctcgaca acatccacga aaacttggcg acatcaaaca gtcgcattca agatacagac 1020
tatgcgaagg aaaccacgca catggtcaaa caacagatcc tacagcaagt cagttacttct 1080
attttggcgc aggcgaaaaa agggccgaat ctcgcgttga ccttgctggg ata 1133

<210> 6
<211> 375
<212> PRT
<213> Vibrio vulnificus

<400> 6
Val Ala Ile Thr Val Asn Thr Asn Val Ala Ala Leu Val Ala Gln Arg
1 5 10 15
His Leu Thr Ser Ala Thr Asp Met Leu Asn Gln Ser Leu Glu Arg Leu
20 25 30
Ser Ser Gly Lys Arg Ile Asn Ser Ala Lys Asp Asp Ala Ala Gly Leu
35 40 45
Gln Ile Ser Asn Arg Leu Gln Ser Gln Met Arg Gly Leu Asp Ile Ala
50 55 60
Val Arg Asn Ala Asn Asp Gly Ile Ser Ile Met Gln Thr Ala Glu Gly
65 70 75 80
Ala Met Asn Glu Thr Thr Asn Ile Leu Gln Arg Met Arg Asp Leu Ser
85 90 95
Leu Gln Ser Ala Asn Gly Ser Asn Ser Tyr Ala Glu Arg Ile Ala Leu
100 105 110
Gln Glu Glu Met Thr Ala Leu Asn Asp Glu Leu Asn Arg Ile Ala Glu
115 120 125
Thr Thr Ser Phe Gly Gly Arg Lys Leu Leu Asn Gly Ser Phe Gly Ser
130 135 140
Ala Ala Phe Gln Ile Gly Ala Ala Ser Gly Glu Ala Val Gln Val Gln
145 150 155 160
Leu Lys Ser Met Arg Ser Asp Gly Ile Asp Met Gly Gly Phe Ser Tyr
165 170 175
Ile Ala Asn Gly Arg Ala Arg Ser Asp Trp Gln Val Lys Glu Gly Ala
180 185 190
Asn Ala Leu Ser Met Ser Phe Thr Asn Arg Phe Gly Glu Thr Glu Thr
195 200 205
Ile Gln Ile Asn Ala Lys Ala Gly Asp Asp Ile Glu Glu Leu Ala Thr
210 215 220

Tyr Ile Asn Gly Gln Thr Asp Lys Val Thr Ala Ser Val Asn Glu Glu
 225 230 235 240
 Gly Gln Leu Gln Leu Phe Met Ala Gly Glu Glu Thr Ser Gly Thr Leu
 245 250 255
 Ser Phe Ser Gly Asp Leu Ala Ser Glu Leu Gly Leu Gln Leu Lys Gly
 260 265 270
 Tyr Asp Ala Val Asp Asn Ile Asp Ile Thr Ser Val Gly Gly Ala Gln
 275 280 285
 Gln Ala Val Ala Val Leu Asp Thr Ala Met Lys Tyr Val Asp Ser His
 290 295 300
 Arg Ala Glu Leu Gly Ala Tyr Gln Asn Arg Phe Ser His Ala Ile Asn
 305 310 315 320
 Asn Leu Asp Asn Ile His Glu Asn Leu Ala Thr Ser Asn Ser Arg Ile
 325 330 335
 Gln Asp Thr Asp Tyr Ala Lys Glu Thr Thr Arg Met Val Lys Gln Gln
 340 345 350
 Ile Leu Gln Gln Val Ser Thr Ser Ile Leu Ala Gln Ala Lys Lys Gly
 355 360 365
 Pro Asn Leu Ala Leu Thr Leu
 370 375

<210> 7
 <211> 1158
 <212> DNA
 <213> *Vibrio vulnificus*

<400> 7
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 gccaaagatg atgcggccgg tttgcaaatt tctaaccgct taaccgctca gtctcggtgc 180
 ctagatgtgg cgatgcgtaa tgccaaacgt ggtatctcta tcgctcaaac cgccgaaggg 240
 gcgtatgtgg aagcgacggc agtcttgcag cgcatgcgtg acttgcgtat tcaatccgct 300
 aacggttacta actcaacgtc tgagcgccaa gcgttcatg aagaagcgag tgctctacaa 360
 gacgaaattt accgtattgc tggaaaccaca tcgtttgggt gacgcccgtct actgaatggc 420
 acctttgggtg atgcagcatt ccagattgggt tctaactctg gtgaagcgat gattatggc 480
 ttaaccagca tccgtgccga tgattccgt atgggtggca cgaccttcca gtctgaaaat 540
 ggcaaaaaca aagattggga agtgagcgcg gataacgcag agctgaacat cgtattgcca 600
 gagatgggtg aagatgaaga tggcaatgtt atcgatttag aaatcaacat catggcgaaa 660
 agcggtgtatg atattgaaga attggcaacg tacatcaatg gtcaatcgga ctacatcaac 720

gcatcggtaa gtgaagatgg caagctgcaa atctttgttg ctcaacccaa tgtgaaaggc 780
 gatatctcga tttcggttag cctgcctct gaactgggtt tgagtgacga accgattgcg 840
 acaacagtac aagatttgg a tctgcgtacc gtacaagggtt ctcagaacgc aattagcggtt 900
 attgacgcgg cattgaagta cggtgattca caacgtgcgg acttaggtgc aaaacagaac 960
 cggttaagcc acagtattaa taacttggcg aacgttcaag aaaacgttga tgcatcgaac 1020
 agccgttta aagatactga ttttgcgaag gaaacgacgc aaatgacgaa agcacagatt 1080
 ttgcaacagg caggtacttc tattcttgct caagcaaaac aattgccaaa ctctgcaatg 1140
 tcactattgc agggctaa 1158

<210> 8
 <211> 383
 <212> PRT
 <213> *Vibrio vulnificus*

<400> 8
 Met Ala Val Thr Val Ser Thr Asn Val Ser Ala Met Thr Ala Gln Arg
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 Tyr Leu Asn Lys Ala Thr Asp Glu Leu Asn Thr Ser Met Glu Arg Leu
 20 25 30
 Ser Ser Gly His Lys Ile Asn Ser Ala Lys Asp Asp Ala Ala Gly Leu
 35 40 45
 Gln Ile Ser Asn Arg Leu Thr Ala Gln Ser Arg Gly Leu Asp Val Ala
 50 55 60
 Met Arg Asn Ala Asn Asp Gly Ile Ser Ile Ala Gln Thr Ala Glu Gly
 65 70 75 80
 Ala Met Asn Glu Ala Thr Ala Val Leu Gln Arg Met Arg Asp Leu Ser
 85 90 95
 Ile Gln Ser Ala Asn Gly Thr Asn Ser Thr Ser Glu Arg Gln Ala Ile
 100 105 110
 His Glu Glu Ala Ser Ala Leu Gln Asp Glu Ile Asn Arg Ile Ala Glu
 115 120 125
 Thr Thr Ser Phe Gly Gly Arg Arg Leu Leu Asn Gly Thr Phe Gly Asp
 130 135 140
 Ala Ala Phe Gln Ile Gly Ser Asn Ser Gly Glu Ala Met Ile Met Gly
 145 150 155 160
 Leu Thr Ser Ile Arg Ala Asp Asp Phe Arg Met Gly Gly Thr Thr Phe
 165 170 175
 Gln Ser Glu Asn Gly Lys Asn Lys Asp Trp Glu Val Ser Ala Asp Asn
 180 185 190

Ala Glu Leu Asn Ile Val Leu Pro Glu Met Gly Glu Asp Glu Asp Gly
 195 200 205
 Asn Val Ile Asp Leu Glu Ile Asn Ile Met Ala Lys Ser Gly Asp Asp
 210 215 220
 Ile Glu Glu Leu Ala Thr Tyr Ile Asn Gly Gln Ser Asp Tyr Ile Asn
 225 230 235 240
 Ala Ser Val Ser Glu Asp Gly Lys Leu Gln Ile Phe Val Ala Gln Pro
 245 250 255
 Asn Val Lys Gly Asp Ile Ser Ile Ser Gly Ser Leu Ala Ser Glu Leu
 260 265 270
 Gly Leu Ser Asp Glu Pro Ile Ala Thr Thr Val Gln Asp Leu Asp Leu
 275 280 285
 Arg Thr Val Gln Gly Ser Gln Asn Ala Ile Ser Val Ile Asp Ala Ala
 290 295 300
 Leu Lys Tyr Val Asp Ser Gln Arg Ala Asp Leu Gly Ala Lys Gln Asn
 305 310 315 320
 Arg Leu Ser His Ser Ile Asn Asn Leu Ala Asn Val Gln Glu Asn Val
 325 330 335
 Asp Ala Ser Asn Ser Arg Ile Lys Asp Thr Asp Phe Ala Lys Glu Thr
 340 345 350
 Thr Gln Met Thr Lys Ala Gln Ile Leu Gln Gln Ala Gly Thr Ser Ile
 355 360 365
 Leu Ala Gln Ala Lys Gln Leu Pro Asn Ser Ala Met Ser Leu Leu
 370 375 380

<210> 9
 <211> 1134
 <212> DNA
 <213> Vibrio vulnificus

<400> 9
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 gcaaaagatg acgcagccgg tctgcaaatac tctaaccgct tgaacgtgca aagtcgcggt 180
 ctagacgttg cggtagttaa cgccaaacgac ggtatctcaa tcgcacaaac cgcagaaggt 240
 gcgatgaacg agaccaccaa catcctacaa cgtatgcgtg acctatctct gcaatcagcg 300
 aacggctcaa actcaaaatc agagcgcgtg gcgattcaag aagagatcac cgcattgaac 360
 gacgagctaa accgtatcgc agaaaccacg tctttggtg gtaacaaact gctcaacggc 420
 acttacggca cgaaagcaat gcaaattggt gcggataacg gtgaagcggt catgctgtca 480

ctcaaagaca	tgcgctctga	caacgtgatg	atgggcggcg	tgagctacca	agctgaagaa	540
ggcaaagaca	agaactggaa	tgtggccgca	ggcgacaacg	acttgacgat	tgcactgaca	600
gacagctttg	gtaacgagca	agagatcgaa	atcaacgcga	aagcgggcga	tgacatcgaa	660
gagctagcga	cgtacatcaa	cggtcaaact	gaccttgtaa	aagcgtcagt	gggtgaaggc	720
ggcaagctac	agatcttgc	tggtaacaac	aaagttcaag	gtgaaattgc	tttctcaggt	780
agcctagctg	gtgaacttgg	cctaggcgaa	ggcaaaaacg	tcacggtaga	cacgattgac	840
gtgacaacccg	tacaaggtgc	gcaagagtcg	gtagcgatttgc	tggatgcggc	actgaaatac	900
gtagacagcc	accgtgcaga	gctgggtgca	ttccagaacc	gtttcaacca	tgcaatcagc	960
aacttggaca	acatcaacga	gaacgtgaac	gcgtcgaaga	gccgaatcaa	agataccgac	1020
ttcgcgaaag	aaacgactca	gttgaccaag	acacaaattc	tatcgcaagc	atcaagttcc	1080
attcttgcgc	aagcgaaaca	agcgccaaac	tcagcgctaa	gtctactagg	ctaa	1134

<210>	10
<211>	377
<212>	PRT
<213>	<i>Vibrio vulnificus</i>

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<400> 10
Met Ala Val Asn Val Asn Thr Asn Val Ala Ala Met Thr Ala Gln Arg
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Ser Ser Gly Phe Lys Ile Asn Ser Ala Lys Asp Asp Ala Ala Gly Leu
35 40 45

Gln Ile Ser Asn Arg Leu Asn Val Gln Ser Arg Gly Leu Asp Val Ala
50 55 60

Val Arg Asn Ala Asn Asp Gly Ile Ser Ile Ala Gln Thr Ala Glu Gly
65 70 75 80

Ala Met Asn Glu Thr Thr Asn Ile Leu Gln Arg Met Arg Asp Leu Ser
85 90 95

Leu Gln Ser Ala Asn Gly Ser Asn Ser Lys Ser Glu Arg Val Ala Ile
100 105 110

Gln Glu Glu Ile Thr Ala Leu Asn Asp Glu Leu Asn Arg Ile Ala Glu
115 120 125

Thr Thr Ser Phe Gly Gly Asn Lys Leu Leu Asn Gly Thr Tyr Gly Thr
130 135 140

Lys Ala Met Gln Ile Gly Ala Asp Asn Gly Glu Ala Val Met Leu Ser
145 150 155 160

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Leu Lys Asp Met Arg Ser Asp Asn Val Met Met Gly Gly Val Ser Tyr
165 170 175

Gln Ala Glu Glu Gly Lys Asp Lys Asn Trp Asn Val Ala Ala Gly Asp
180 185 190

Asn Asp Leu Thr Ile Ala Leu Thr Asp Ser Phe Gly Asn Glu Gln Glu
195 200 205

Ile Glu Ile Asn Ala Lys Ala Gly Asp Asp Ile Glu Glu Leu Ala Thr
210 215 220

Tyr Ile Asn Gly Gln Thr Asp Leu Val Lys Ala Ser Val Gly Glu Gly
225 230 235 240

Gly Lys Leu Gln Ile Phe Ala Gly Asn Asn Lys Val Gln Gly Glu Ile
245 250 255

Ala Phe Ser Gly Ser Leu Ala Gly Glu Leu Gly Leu Gly Glu Gly Lys
260 265 270

Asn Val Thr Val Asp Thr Ile Asp Val Thr Thr Val Gln Gly Ala Gln
275 280 285

Glu Ser Val Ala Ile Val Asp Ala Ala Leu Lys Tyr Val Asp Ser His
290 295 300

Arg Ala Glu Leu Gly Ala Phe Gln Asn Arg Phe Asn His Ala Ile Ser
305 310 315 320

Asn Leu Asp Asn Ile Asn Glu Asn Val Asn Ala Ser Lys Ser Arg Ile
325 330 335

Lys Asp Thr Asp Phe Ala Lys Glu Thr Thr Gln Leu Thr Lys Thr Gln
340 345 350

Ile Leu Ser Gln Ala Ser Ser Ser Ile Leu Ala Gln Ala Lys Gln Ala
355 360 365

Pro Asn Ser Ala Leu Ser Leu Leu Gly
370 375

<210> 11
<211> 1127
<212> DNA
<213> Vibrio vulnificus

<400> 11
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gcaagtcagg tagctgaaac ccaaaaaat ctaagttccg gattccgaat taatagtgcc 120
agcgatgtatg ccgctggaat gcagatagcg aatacgcttc acgtccaaac ccgtggttg 180
gatgtggcat taactaacgc tcatagtgct tatgctgttg cagaaacagc ggaaggggcg 240
ttggaagagg gcagtgaaat actgcagaga ttgcgatctc tttctttca agccgcaaac 300
ggatcgaatt ctgatgagga tcggcaaagt ttgcagttgg aagtgggttgt attgaaagat 360

gaagtggaaa gaatagccag gacaaccaca tttgcgggta aaaatctgtt tgatggaagt 420
 tatggttcaa aaagtttca tcttggggca aattctaatt ccatttctt gcaactcaaa 480
 aacatgcgga ctcacgttcc tgagatgggc gggtatcatt accttgcctc ggagccagcg 540
 gatgaggatt ggcaagttga caaggaatca aggcaactta gctttacttt tcgagatagc 600
 gaaggggatg atcaatccat taagatctcg cttaaggctg gagacagtct cgaagaagtc 660
 gctacgtata tcaattcaca gcaaaatgtt gtggagtcct cggtgacgga tgatcggcga 720
 ttgcagttt atgtcgctaa tcgtcacgct cctgatggtt taaatatctc aggaagctt 780
 gagggagagc tagactttga accgcaagga caagtgacgc tcgatgaact cgatatcagt 840
 agtgtgggtg gtgctcaatt ggcgattgct gttgttgata ctgcaattca atatctggat 900
 tctcaccgaa gtgaaatcgg cagtttcaa aatcgggttag aggggacgat ggacaatttg 960
 caaagtatca atcgcaatgt cactgaatca aaagggcgaa tatgggatac cgattttgcg 1020
 aaagcatcaa ccgctttagt gaagtctcag gtattgcaac aggctacctc tgccttgctg 1080
 gctcaagcca agcaagcccc aggcagtgca attggattgc tatctta 1127

<210> 12
 <211> 375
 <212> PRT
 <213> *Vibrio vulnificus*

<400> 12
 Met Val Ser Leu Asn Thr Asn Val Ser Ala Met Val Ala Gln Arg His
 1 5 10 15
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 35 40 45
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 Thr Asn Ala His Ser Ala Tyr Ala Val Ala Glu Thr Ala Glu Gly Ala
 65 70 75 80
 Leu Glu Glu Gly Ser Glu Ile Leu Gln Arg Leu Arg Ser Leu Ser Leu
 85 90 95
 Gln Ala Ala Asn Gly Ser Asn Ser Asp Glu Asp Arg Gln Ser Leu Gln
 100 105 110
 Leu Glu Val Val Val Leu Lys Asp Glu Val Glu Arg Ile Ala Arg Thr
 115 120 125
 Thr Thr Phe Ala Gly Lys Asn Leu Phe Asp Gly Ser Tyr Gly Ser Lys
 130 135 140

Ser Phe His Leu Gly Ala Asn Ser Asn Ser Ile Ser Leu Gln Leu Lys
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 Ser Glu Pro Ala Asp Glu Asp Trp Gln Val Asp Lys Glu Ser Arg Gln
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 Leu Ser Phe Thr Phe Arg Asp Ser Glu Gly Asp Asp Gln Ser Ile Lys
 195 200 205
 Ile Ser Leu Lys Pro Gly Asp Ser Leu Glu Glu Val Ala Thr Tyr Ile
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 225 230 235 240
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 Ser Gly Ser Leu Glu Gly Glu Leu Asp Phe Glu Pro Gln Gly Gln Val
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 Thr Leu Asp Glu Leu Asp Ile Ser Ser Val Gly Gly Ala Gln Leu Ala
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 Ile Ala Val Val Asp Thr Ala Ile Gln Tyr Leu Asp Ser His Arg Ser
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 325 330 335
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36

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